

1/15

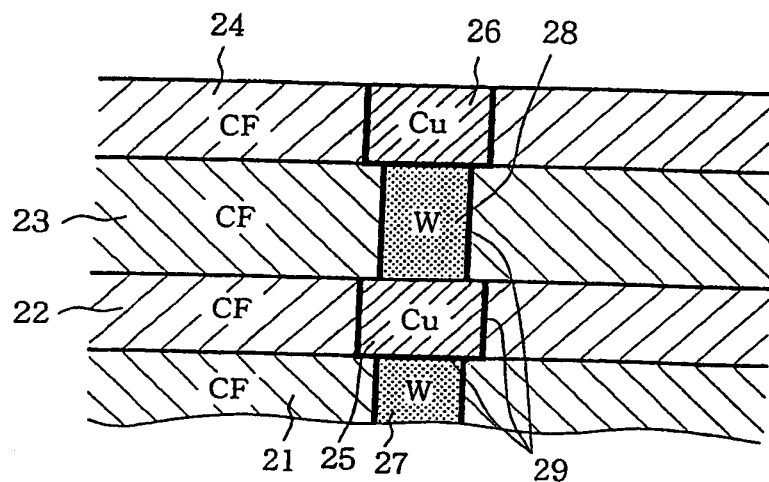


FIG. 1a

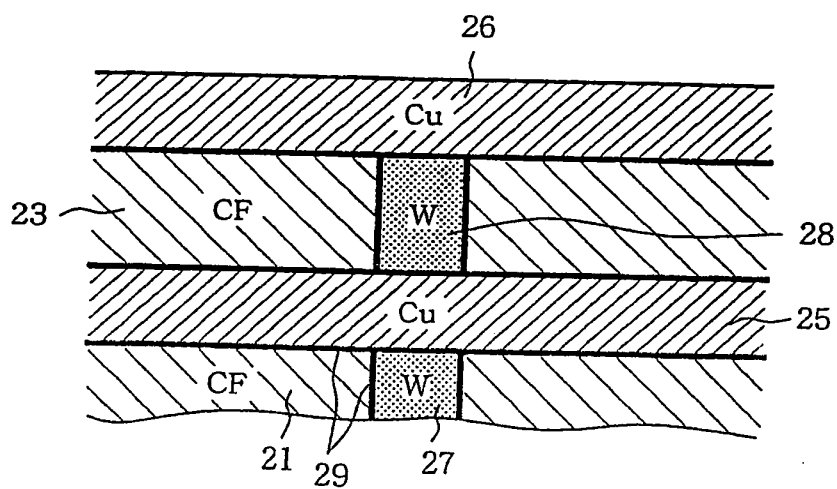


FIG. 1b

2/15

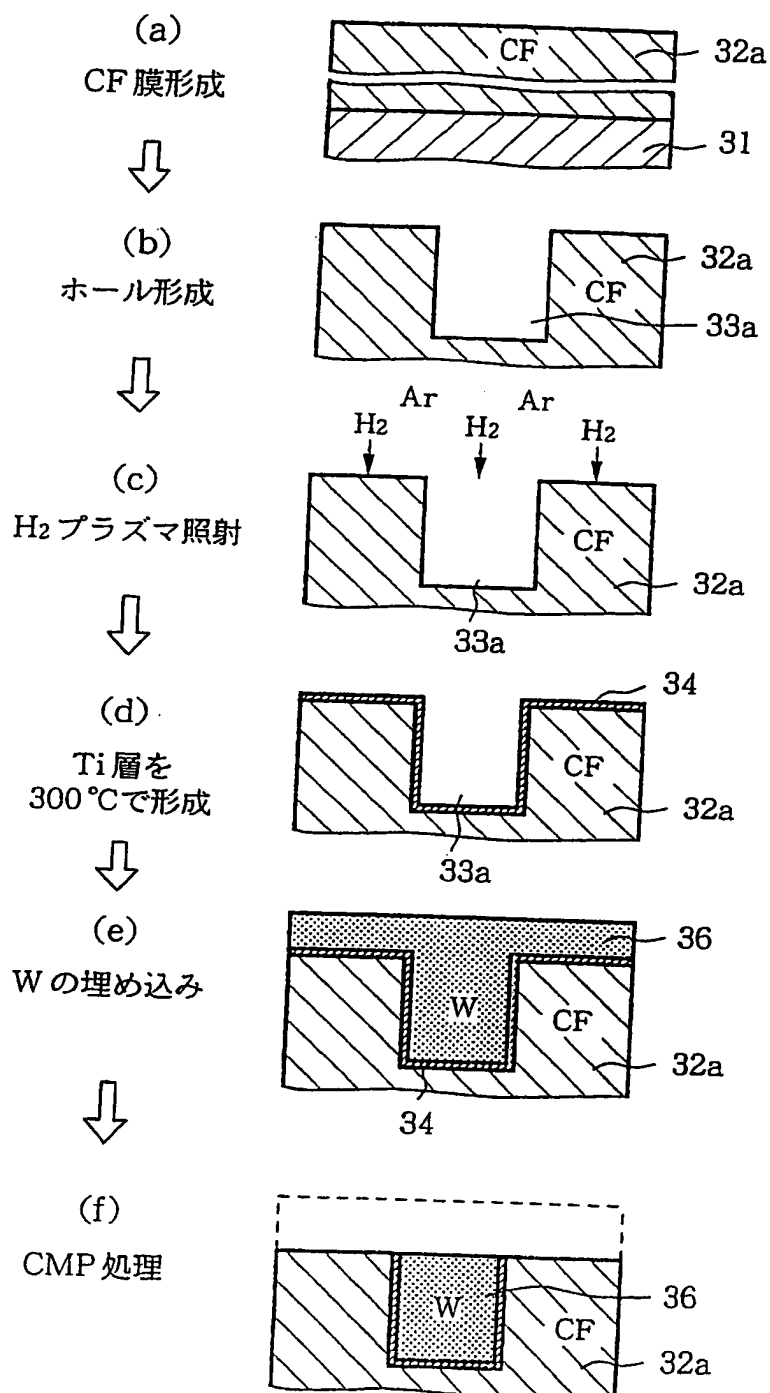
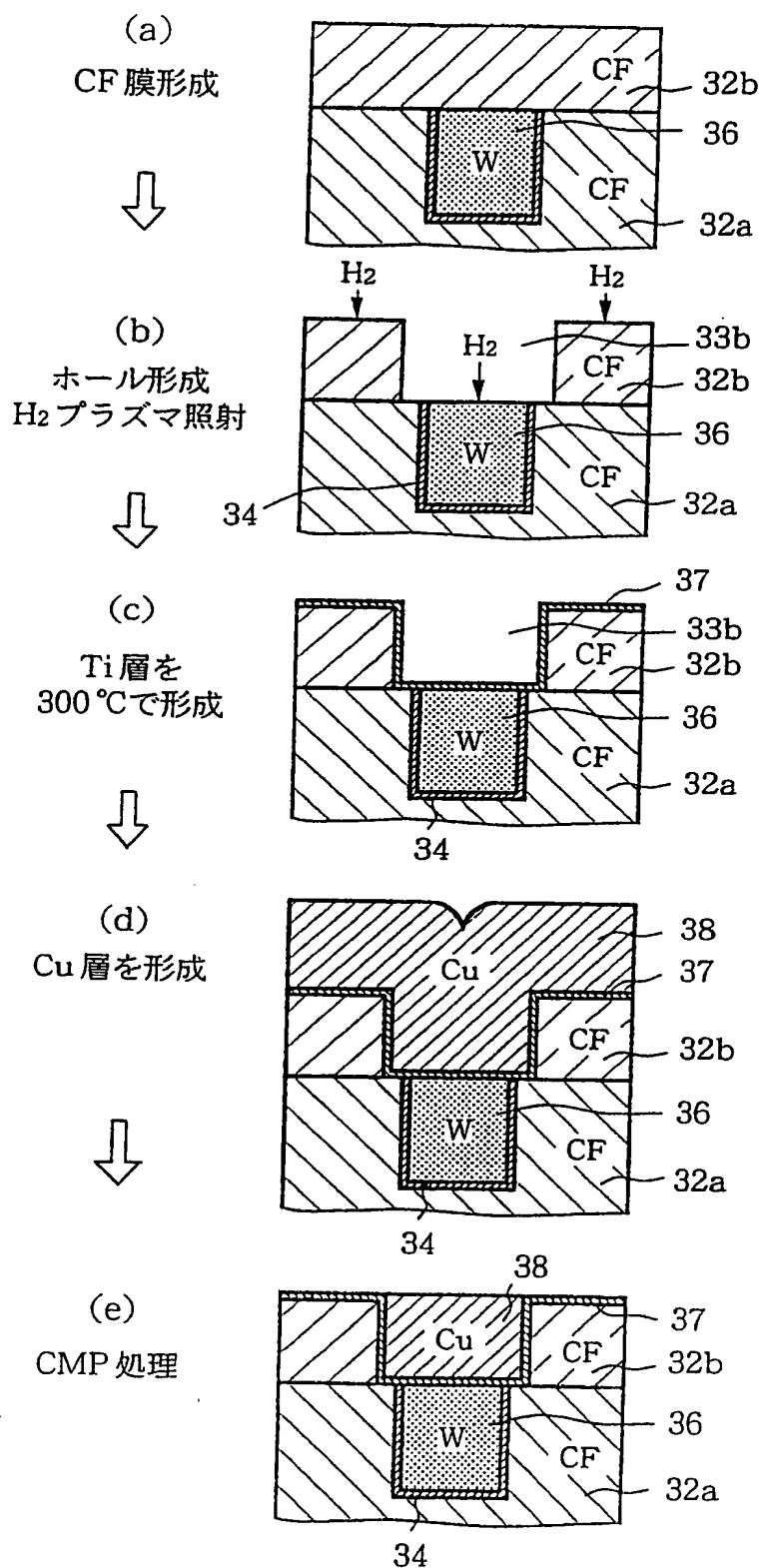


FIG. 2

3/15



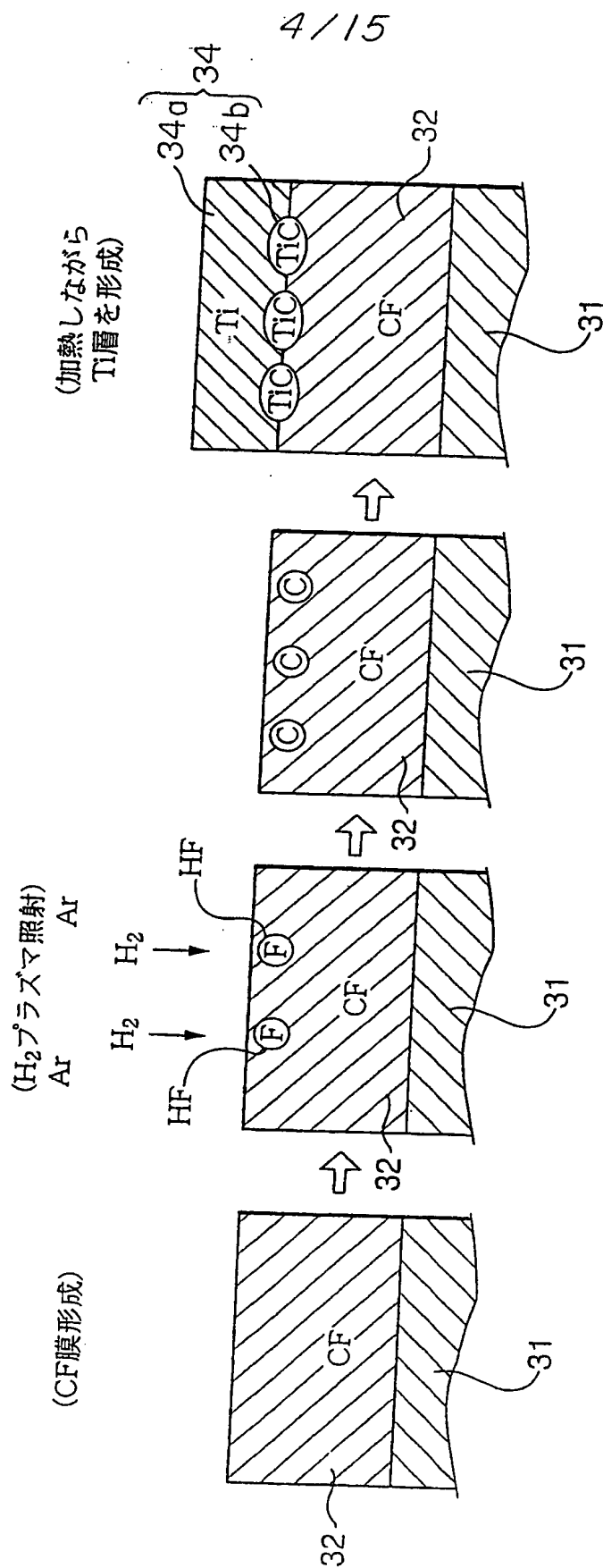


FIG. 4

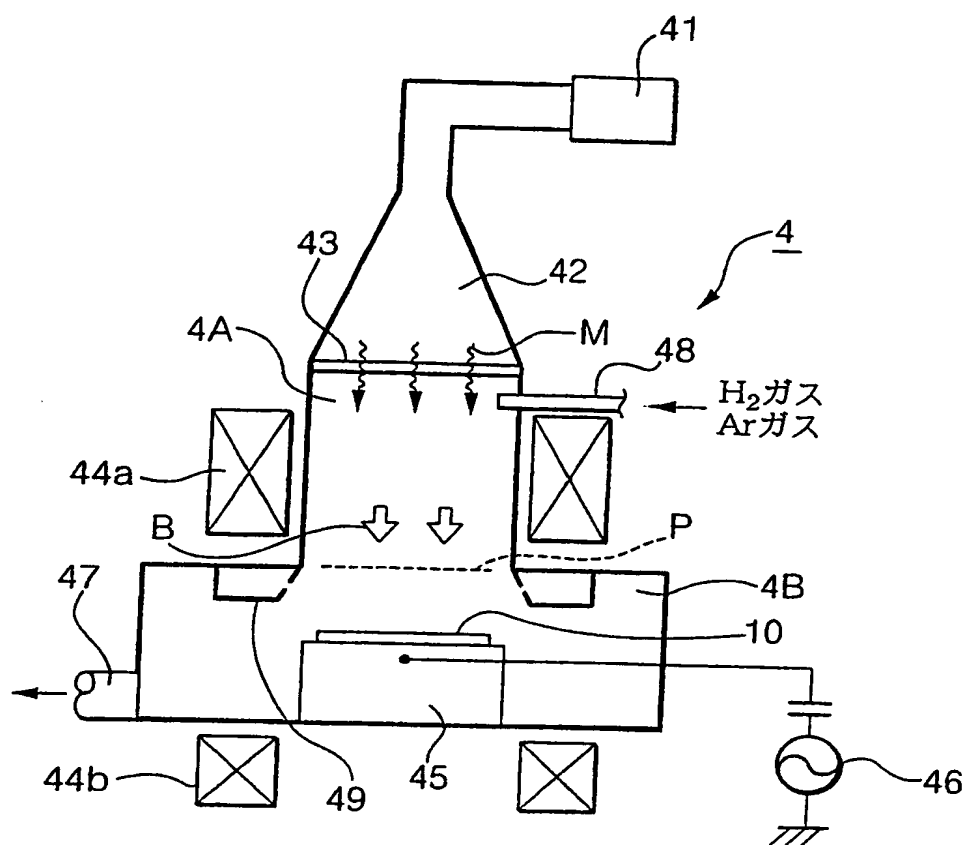


FIG. 5

6/15

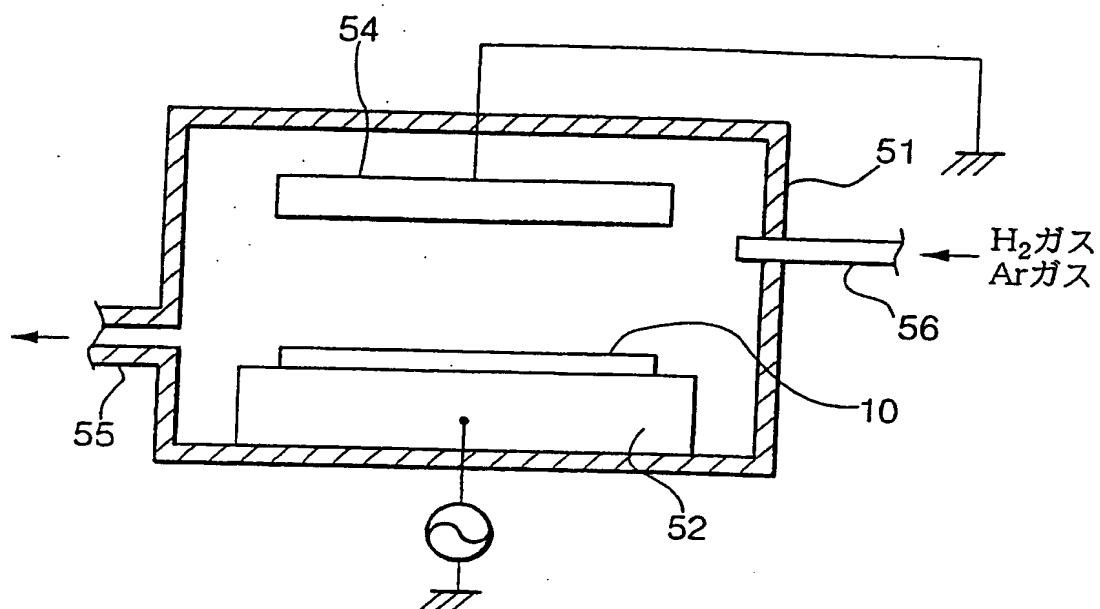


FIG. 6

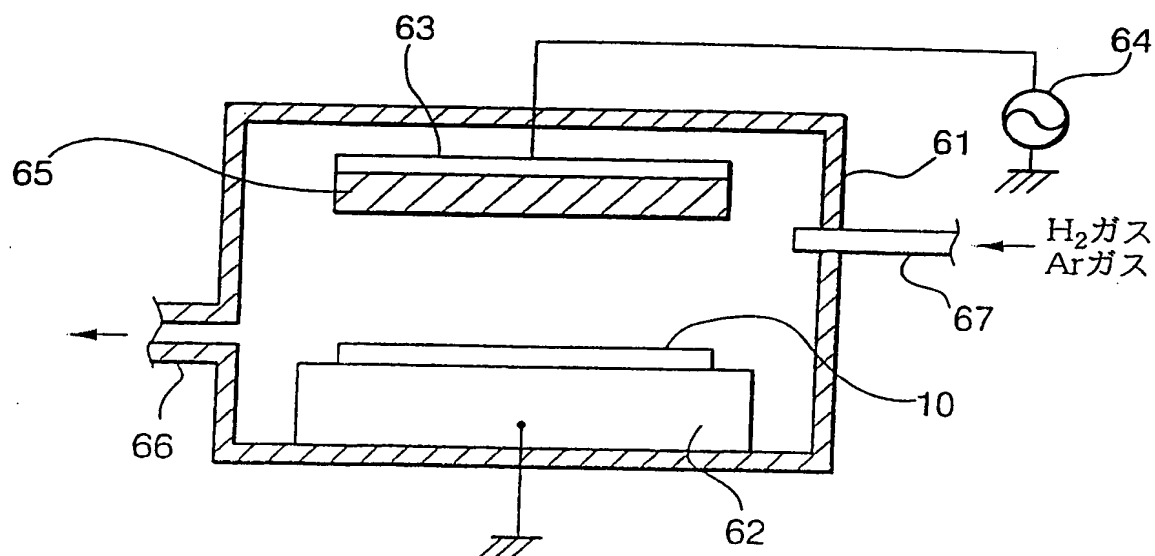


FIG. 7

7/15

Cu	2000 Å
Ti	500 Å
CF	5000 Å
Si	

FIG. 8a

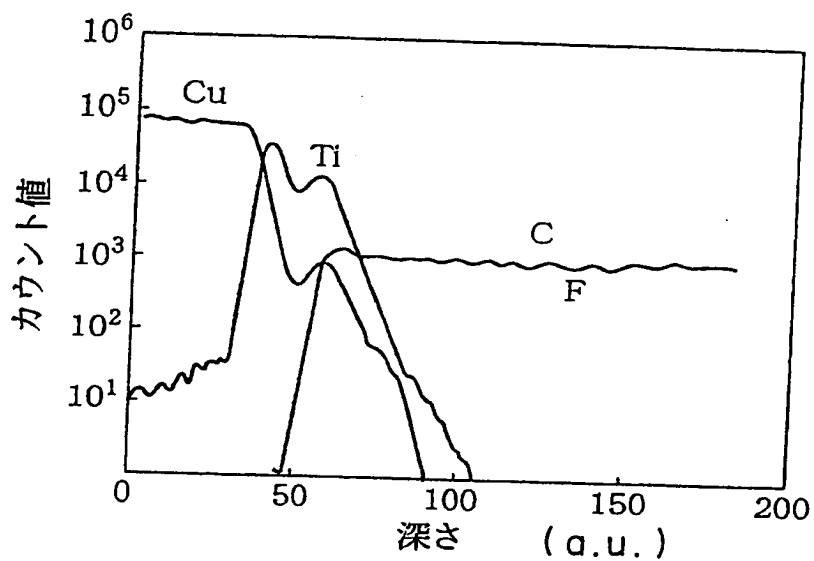


FIG. 8b

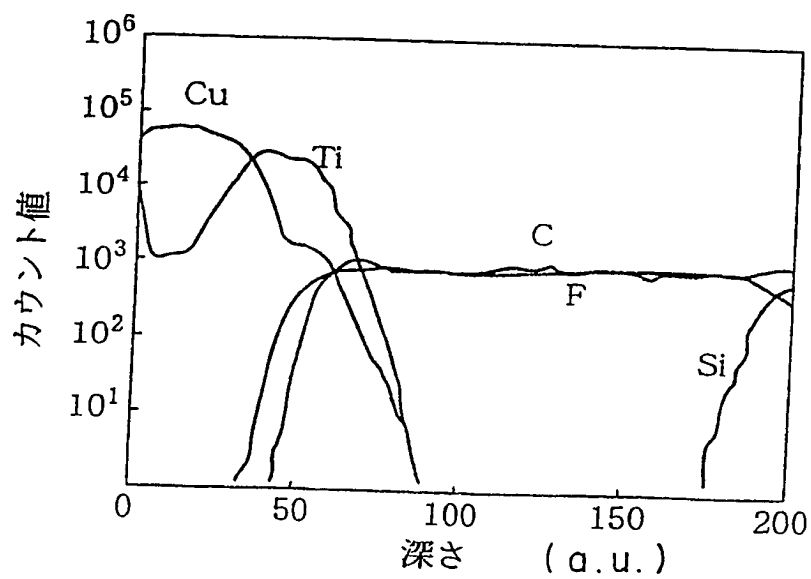


FIG. 8c

8/15

Cu	2000Å
Ti	500Å
SiO ₂	5000Å
Si	

FIG. 9a

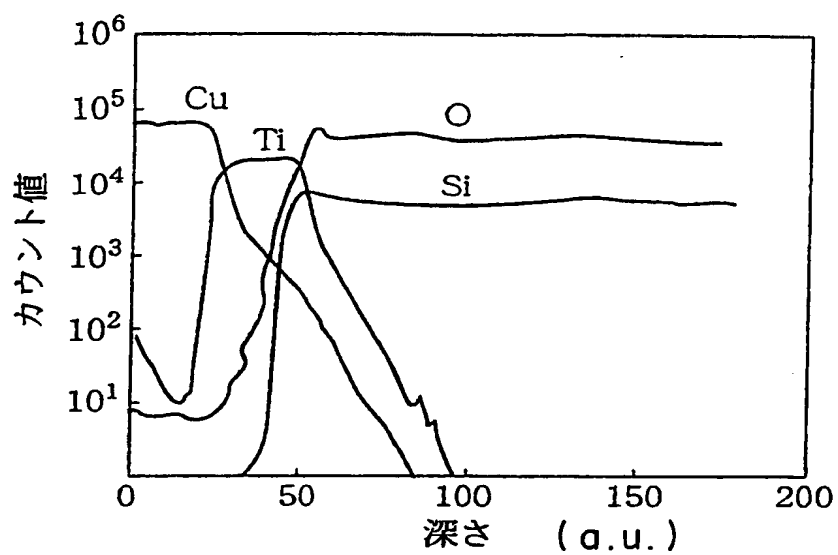


FIG. 9b

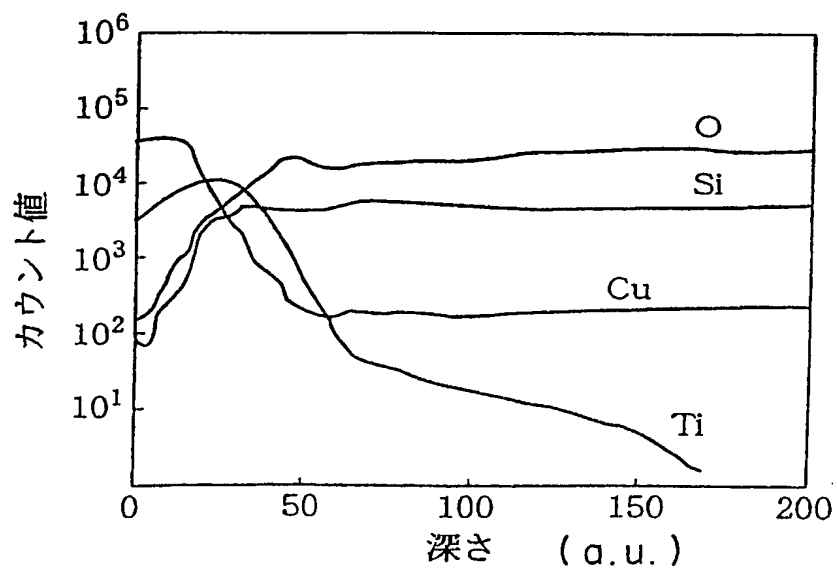


FIG. 9c

9/15

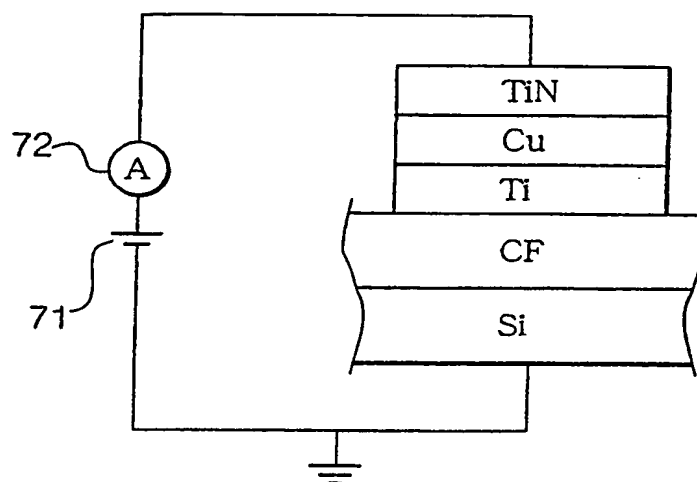


FIG. 10

10/15

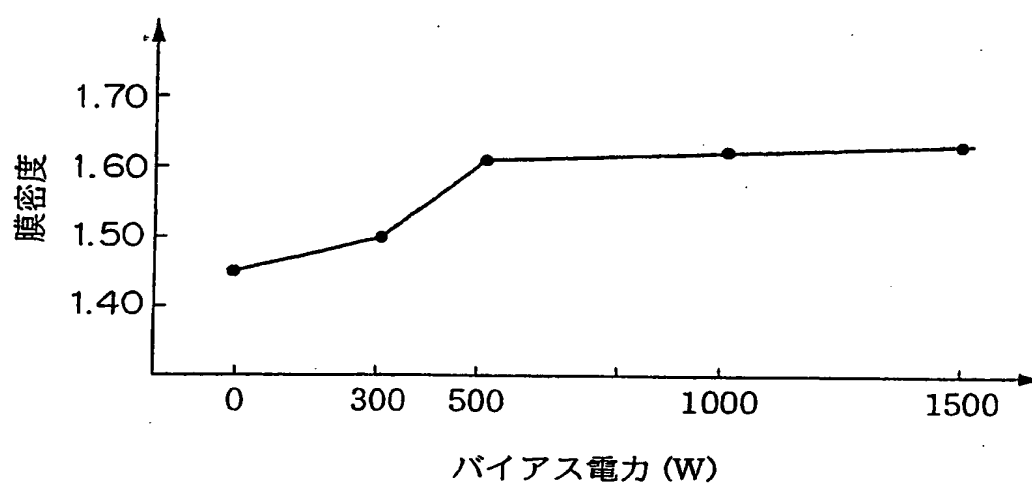


FIG. 11a

バイアス電力 (W)	0	300	500	1000	1500
MTTF (hr)	0.98	1.63	1.65	1.80	1.92

FIG. 11b

11/15

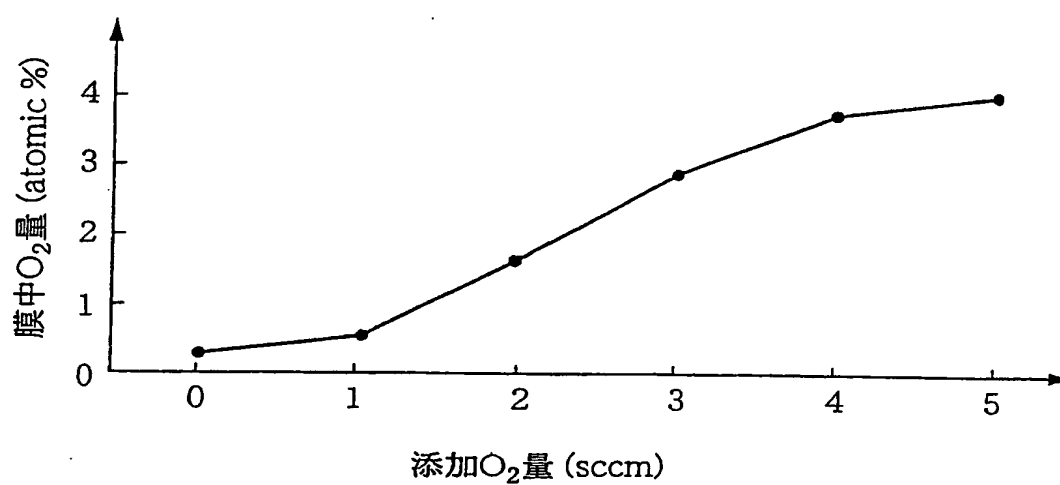


FIG. 12a

添加O ₂ 量 (sccm)	0	1	2	3	4	5
MTTF (hr)	1.92	2.13	2.11	1.90	0.84	0.65

FIG. 12b

12/15

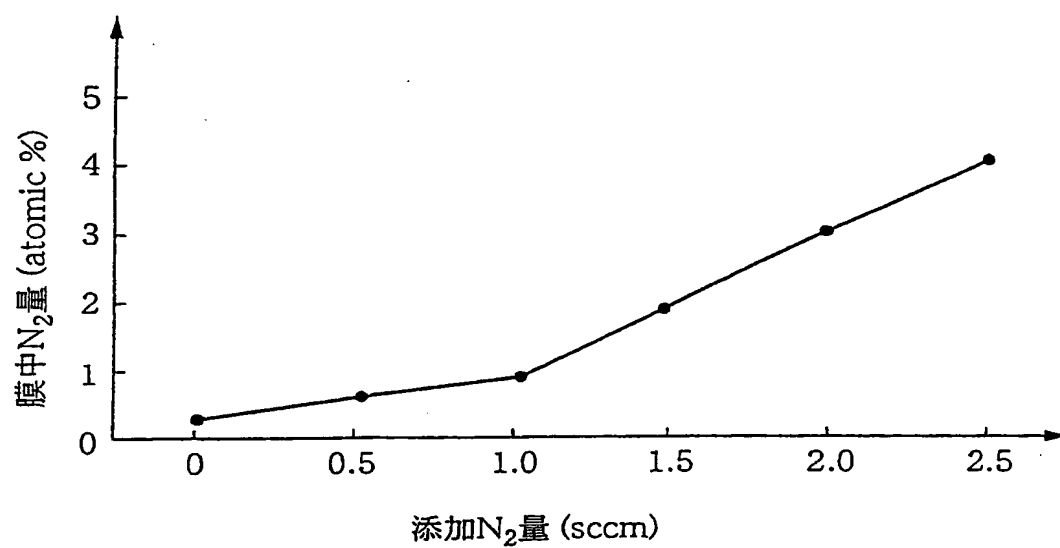


FIG. 13a

添加N ₂ 量 (sccm)	0	0.5	1.0	1.5	2.0	2.5
MTTF (hr)	1.92	1.81	1.70	1.65	1.55	0.78

FIG. 13b

13/15

添加BF ₃ 量 (sccm)	膜中B量
0.1	5×10^{-4} atomic %
0.2	10^{-3} atomic %
1	0.01 atomic %
5	0.1 atomic %
10	1 atomic %
20	2 atomic %

FIG. 14a

添加BF ₃ 量(sccm)	0.1	0.2	1	5	10	20
MTTF (hr)	1.98	2.35	2.65	2.68	2.76	0.75

FIG. 14b

14/15

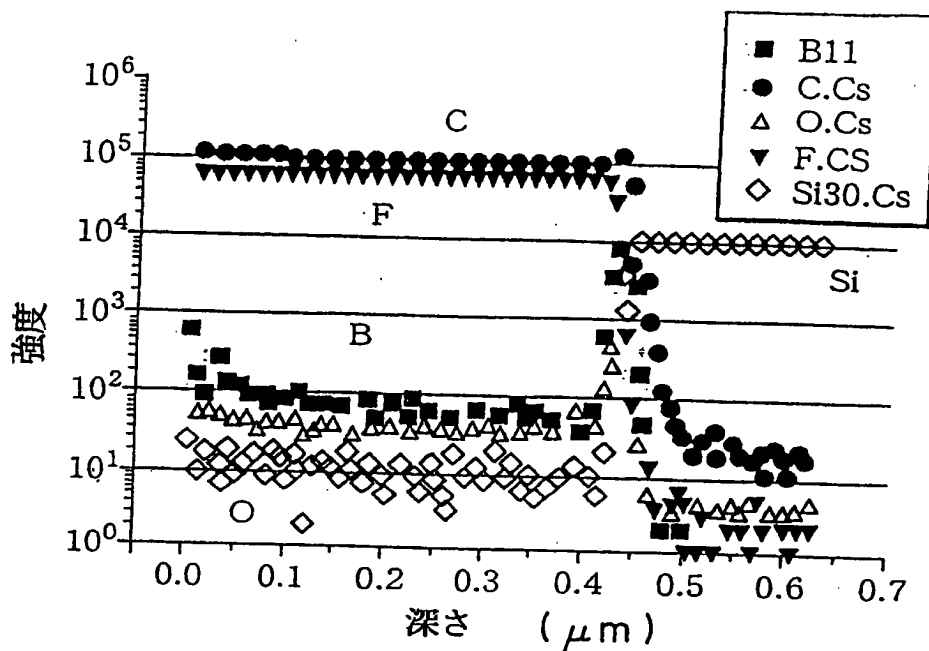


FIG. 15a

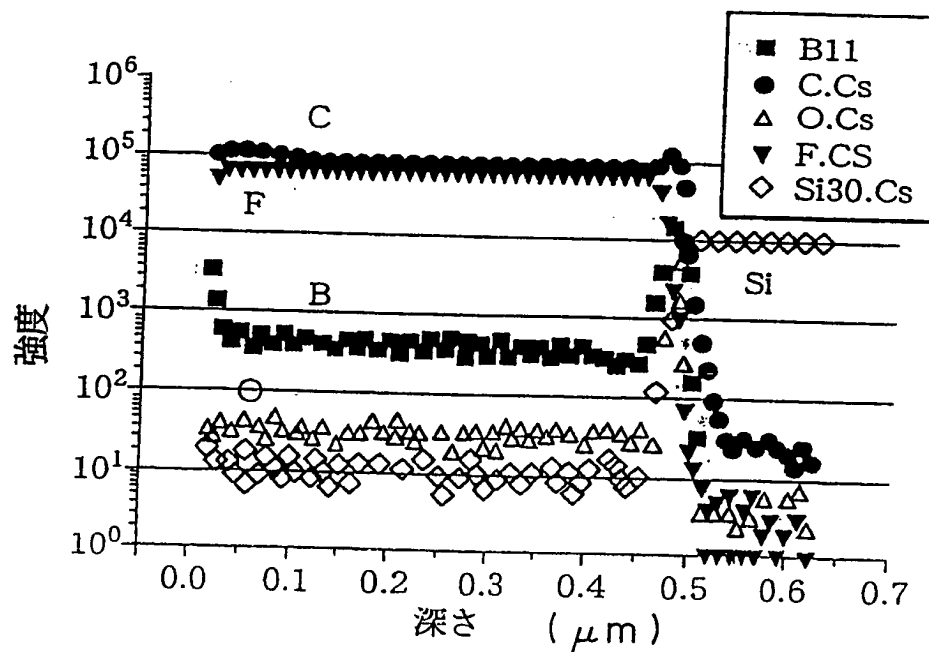


FIG. 15b

15/15

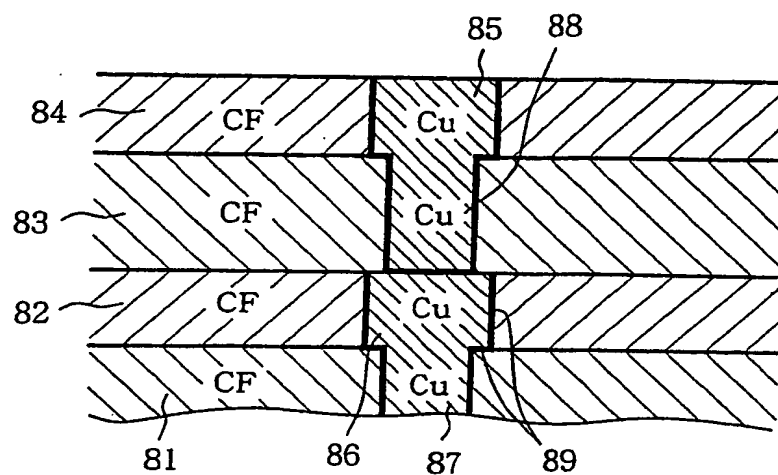


FIG. 16

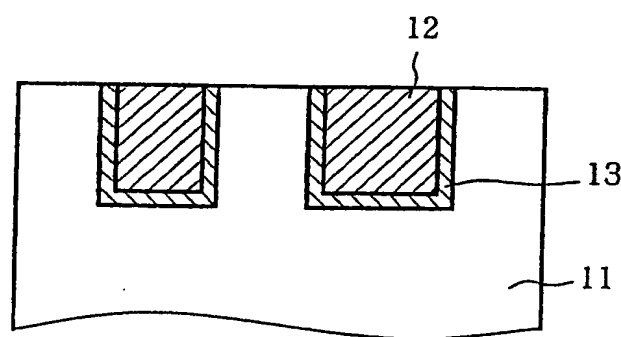


FIG. 17